CHANGE ISSUE – RTCA SC-186 WG4

ASA / ASAS

Tracking Information (committee secretary only)	
Change Issue Number	16
Submission Date	September 1, 2004
Status (open/closed/deferred)	Pending
Last Action Date	September 1, 2004

Short Title for Change Issue:	ADS-B on surface vehicles using tunnels under runways and taxiways.

Topic:	X	ASA		High-level		ASAS		STP	X	ASSAP	X	CDTI

Document Reference:		Originator Information:	
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Table/Figure number(s)		Other	

Proposed Rationale for Consideration (originator should check all that apply):	
	Item needed to coordinate with other documents
X	ASA MASPS
	1090 MHz Link MOPS
	UAT Link MOPS
	TIS-B MASPS
X	Previously written CDTI MOPS
	Other (include document title):
	Item needed for harmonization with international requirements
X	Item identified during recent ADS-B development activities and operational evaluations
	MOPS clarifications and correction item
	Validation/modification of questioned MOPS requirement item
	Military use provision item
X	New requirement item

Nature of Issue:		Editorial		Clarity	X	Performance	X	Functional

Issue Description:

A number of major US airports have roads that run through tunnels under runways and taxiways. The FAA is now demonstrating ADS-B for identifying and tracking airport surface vehicles.

1. Consider the case of an ADS-B-equipped airport surface vehicle approaching a runway and going through the tunnel underneath the runway. How will that vehicle be presented to a pilot on final approach or a pilot who has just been cleared for departure on that runway? The vehicle does NOT constitute a hazard. Will it appear to be a potential hazard to the pilot?
2. Consider the case of an ADS-B-equipped vehicle on the runway at a point just above the tunnel. How will that vehicle be presented to a pilot on final approach or a pilot who has just been cleared for departure on that runway? The vehicle DOES constitute a hazard. Will the pilot recognize this hazard or will the pilot incorrectly assume that the vehicle is in the tunnel under the runway?

How does RTCA recommend that this issue be addressed?

Originator's proposed resolution if any (attach additional sheets if necessary):

We suggest that RTCA seek a solution to this problem in the avionics.

On the ground, there is a least three "solutions" to this problem that we have considered and **rejected**:

1. Air traffic could treat the airport surface vehicle as they would if the tunnel were not there. Procedures could be established to hold surface vehicles short of the tunnel and clear vehicles through the tunnel when it did not conflict with aircraft on the runway. This would increase ATC workload and obviate many of the benefits of having a tunnel under the runway. **Thus we find this alternative unattractive.**

2. The ADS-B for airport surface vehicles could be programmed not to transmit in the tunnel or on the road leading to the tunnel. This raises the question of risk: Could the ADS-B for airport surface vehicles be programmed not to transmit when the signal is not desirable (in the tunnel or on the road leading to the tunnel) and still be certain that it will transmit when needed (e.g., when the vehicle is on the runway above the tunnel. **In view of the difficulties involved in avoiding alpha and beta errors, we do NOT recommend this alternative.**

   [Alpha errors: Transmitting when transmission ought not to occur
   Beta errors: Not transmitting when transmission ought to be occurring]

3. Don't install ADS-B equipment in airport surface vehicles at airports that have tunnels under runways. **We do NOT recommend this alternative.**

With these three options explored and found to be undesirable, what other options might there be??

Note: Attach additional sheets to capture supporting discussion with source and date.